

# VIC 20 / Commodore 64 Memory Map

Jim Butterfield, Toronto Ont.

There are some differences between the 20 and 64 as indicated. Zero Page contents at power-up by Richard Evers.

Location		Contents				Description
Hex	Dec	VIC Hex Dec	C64 Hex Dec			
00-02	0-2	0 4C	76 2F	47	55	USR Jump. 64: Chip directional reg.
01		1 48	72 37	55	55	64: Chip I/O; memory & tape control
02		2 D2	210 33	51	51	20: JMP \$D248. 64: Unused
03-04	3-4	3 AA	170 AA	170	170	Float-Fixed vector
04		4 D1	209 B1	177	177	
05-06	5-6	5 91	145 91	145	145	Fixed-Float vector
06		6 D3	211 B3	179	179	
07	7	7 22	34 22	34	34	Search character
08	8	8 22	34 22	34	34	Scan-quotes flag
09	9	9 00	0 00	0	0	TAB column save
0A	10	10 00	0 00	0	0	0 = LOAD, 1 = VERIFY
0B	11	11 4C	76 4C	76	76	Input buffer pointer/# subscripts
0C	12	12 00	0 00	0	0	Default DIM flag
0D	13	13 00	0 00	0	0	Type: FF = string, 00 = numeric
0E	14	14 00	0 00	0	0	Type: 80 = integer, 00 = floating pt
0F	15	15 00	0 00	0	0	DATA scan/LIST quote/memory flag
10	16	16 00	0 00	0	0	Subscript/FNx flag
11	17	17 00	0 00	0	0	0 = INPUT; \$40 = GET; \$98 = READ
12	18	18 00	0 00	0	0	ATN sign/Comparison eval. flag
13	19	19 05	5 05	5	5	Current I/O prompt flag
14-15	20-21	20 14	20 14	20	20	Integer value
15		21 00	0 00	0	0	
16	22	22 19	25 19	25	25	<b>Pointer:</b> Temporary string stack
17-18	23-24	23 16	22 16	22	22	Last temp string vector
18		24 00	0 00	0	0	
19-21	25-33	25 02	25 02	2	2	Stack for temporary strings
1A		26 FE	254 FE	254	254	
1B		27 1D	29 9F	159	159	
1C		28 0	0 00	0	0	
1D		29 00	0 00	0	0	
1E		30 00	0 00	0	0	
1F		31 00	0 1E	30	30	
20		32 00	0 00	0	0	
21		33 00	0 00	0	0	
22-25	34-37	34 05	5 05	5	5	Utility pointer area
23		35 10	16 08	8	8	
24		36 F3	243 F3	243	243	
25		37 01	1 01	1	1	
26-2A	38-42	38 00	0 00	0	0	Product area for multiplication
27		39 00	0 00	0	0	
28		40 00	0 00	0	0	
29		41 00	0 00	0	0	
2A		42 00	0 00	0	0	
2B-2C	43-44	43 01	1 01	1	1	<b>Pointer:</b> Start of BASIC
2C		44 10	16 08	8	8	
2D-2E	45-46	45 03	3 03	3	3	<b>Pointer:</b> Start of Variables
2E		46 10	16 08	8	8	
2F-30	47-48	47 0A	10 0A	10	10	<b>Pointer:</b> Start of Arrays
30		48 10	16 08	8	8	
31-32	49-50	49 0A	10 0A	10	10	<b>Pointer:</b> End of Arrays
32		50 10	16 08	8	8	
33-34	51-52	51 00	0 00	0	0	<b>Pointer:</b> String Storage (moving down)
34		52 1E	30 A0	160	160	
35-36	53-54	53 00	0 00	0	0	<b>Pointer:</b> String Utility
36		54 1E	30 A0	160	160	
37-38	55-56	55 00	0 00	0	0	<b>Pointer:</b> Limit of Memory
38		56 1E	30 A0	160	160	
39-3A	57-58	57 00	0 00	0	0	Current BASIC line number
3A		58 FF	255 FF	255	255	
3B-3C	59-60	59 00	0 00	0	0	Previous BASIC line number
3C		60 00	0 00	0	0	
3D-3E	61-62	61 3D	61 00	0	0	<b>Pointer:</b> BASIC statement for CONT
3E		62 00	0 00	0	0	
3F-40	63-64	63 00	0 00	0	0	Current DATA line number
40		64 00	0 00	0	0	
41-42	65-66	65 00	0 00	0	0	Current DATA address
42		66 10	16 08	8	8	
43-44	67-68	67 00	0 00	0	0	Input vector
44		68 00	0 00	0	0	
45-46	69-70	69 41	65 41	65	65	Current variable name
46		70 00	0 00	0	0	
47-48	71-72	71 05	5 05	5	5	Current variable address
48		72 10	16 08	8	8	
49-4A	73-74	73 05	5 05	5	5	Variable pointer for FOR/NEXT
4A		74 10	16 08	8	8	
4B-4C	75-76	75 00	0 00	0	0	Y-save; op-save; BASIC pointer save
4C		76 00	0 00	0	0	
4D	77	77 00	0 00	0	0	Comparison symbol accumulator
4E-53	78-83	78 00	0 00	0	0	Misc. work area, pointers, etc.
4F		79 00	0 00	0	0	
50		80 00	0 00	0	0	
51		81 00	0 00	0	0	

Location		Contents				Description
Hex	Dec	VIC Hex Dec	C64 Hex Dec			
52	82	00	0	00	0	
53	83	03	3	03	3	
54 -56	84-86	84 4C	76 4C	76	Jump vector for functions	
55	85	0D	13	0D	13	
56	86	D8	216 B8	184		
57 -60	87-96	87 00	0	00	0	
58	88	0A	10	0A	10	
59	89	1F	15	07	7	
5A	90	03	3	03	3	
5B	91	1F	15	07	7	
5C	92	00	0	00	0	
5D	93	00	0	00	0	
5E	94	00	0	00	0	
5F	95	03	3	03	3	
60	96	10	16	08	8	
61	97	97 87	135 87	135	Accum*1: Exponent	
62 -65	98-101	98 00	0	00	0	
63	99	00	0	00	0	
64	100	00	0	00	0	
65	101	65	101	65	101	
66	102	102 4C	76 4C	76	Accum*1: Sign	
67	103	103 00	0	00	0	
68	104	104 00	0	00	0	
69 -6E	105-110	105 00	0	00	0	
6A	106	00	0	00	0	
6B	107	00	0	00	0	
6C	108	00	0	00	0	
6D	109	00	0	00	0	
6E	110	00	0	00	0	
6F	111	111 00	0	00	0	
70	112	112 00	0	00	0	
71 -72	113-114	113 01	1	01	1	
72	114	01	1	01	1	
73 -8A	115-138	115 E6	230 E6	230	CHRGET subroutine; get BASIC char	
74	116	7A	122 7A	122	:INC \$7A	
75	117	D0	208 D0	208	:BNE \$0079	
76	118	02	2	02	2	
77	119	E6	230 E6	230	:INC \$7B	
78	120	7B	123 7B	123		
79	121	AD	173 AD	173	:LDA \$022D 64: LDA \$022C	
7A	122	2D	45 2C	44		
7B	123	02	2	02	2	
7C	124	C9	201 C9	201	:CMP #\$3A	
7D	125	3A	58 3A	58		
7E	126	B0	176 B0	176	:BCS \$008A	
7F	127	0A	10	0A	10	
80	128	C9	201 C9	201	:CMP #\$20	
81	129	20	32 20	32		
82	130	F0	240 F0	240	:BEQ \$0073	
83	131	EF	239 EF	239		
84	132	38	56 38	56	:SEC	
85	133	E9	233 E9	233	:SBC #\$30	
86	134	30	48 30	48		
87	135	38	56 38	56	:SEC	
88	136	E9	233 E9	233	:SBC #\$D0	
89	137	D0	208 D0	208		
8A	138	60	96 60	96	:RTS	
7A -7B	122-123	122 2D	45 2C	44	BASIC pointer (within subrtn)	
7B	123	02	2	02	2	
8B -8F	139-143	139 80	128 80	128	RND seed value	
8C	140	4F	79 4F	79		
8D	141	C7	199 C7	199		
8E	142	52	82 52	82		
8F	143	58	88 58	88		
90	144	144 00	0	00	0	
91	145	145 FF	255 FF	255	Status word ST	
92	146	146 00	0	00	0	
93	147	147 00	0	00	0	
94	148	148 55	85 55	85	Keyswitch PIA: STOP and RVS flags	
95	149	149 FF	255 FF	255	Timing constant for tape	
96	150	150 00	0	00	0	
97	151	151 10	16	00	0	
98	152	152 01	1	01	1	
99	153	153 00	0	00	0	
9A	154	154 08	8	08	8	
9B	155	155 00	0	00	0	
9C	156	156 00	0	00	0	
9D	157	157 80	128 80	128	LOAD = 0, VERIFY = 1	
9E	158	158 00	0	00	0	
9F	159	159 00	0	00	0	
A0 -A2	160-162	160 00	0	00	0	
A1	161	25	37 3B	59	Serial output: deferred char flag	
					Serial deferred character	
					Tape EOT received	
					Register save	
					How many open files	
					Input device, normally 0	
					Output CMD device, normally 3	
					Tape character parity	
					Byte-received flag	
					Direct = \$80/RUN = 0 output control	
					Tp Pass 1 error log/char buffer	
					Tp Pass 2 err log corrected	
					Jiffy Clock HML	

Location		Contents		Description	
Hex	Dec	VIC Hex Dec	C64 Hex Dec		
A3	A2	162	74	116	38
A3	A3	163	55	85	55
A4	A4	164	00	0	00
A5	A5	165	00	0	00
A6	A6	166	00	0	00
A7	A7	167	00	0	00
A8	A8	168	00	0	00
A9	A9	169	00	0	00
AA	AA	170	00	0	00
AB	AB	171	00	0	00
AC-AD	AC	172-173	00	0	00
AD	AD	173	00	0	00
AE-AF	AE	174-175	00	0	00
AF	AF	175	00	0	00
B0-B1	B0	176-177	00	0	00
B1	B1	177	00	0	00
B2-B3	B2	178-179	00	0	00
B3	B3	179	00	0	00
B4	B4	180	00	0	00
B5	B5	181	00	0	00
B6	B6	182	00	0	00
B7	B7	183	11	17	10
B8	B8	184	05	5	05
B9	B9	185	65	101	65
BA	BA	186	08	8	08
BB-BC	BB	187-188	00	0	00
BC	BC	188	00	0	00
BD	BD	189	00	0	00
BE	BE	190	00	0	00
BF	BF	191	00	0	00
C0	C0	192	00	0	00
C1-C2	C1	193-194	00	0	00
C2	C2	194	00	0	00
C3-C4	C3	195-196	00	0	00
C4	C4	196	00	0	00
C5	C5	197	00	0	00
C6	C6	198	00	0	00
C7	C7	199	00	0	00
C8	C8	200	00	0	00
C9-CA	C9	201-202	00	0	00
CA	CA	202	00	0	00
CB	CB	203	00	0	00
CC	CC	204	00	0	00
CD	CD	205	00	0	00
CE	CE	206	00	0	00
CF	CF	207	00	0	00
D0	D0	208	00	0	00

Location		Contents		Description	
Hex	Dec	VIC Hex Dec	C64 Hex Dec		
D1-D2	D1	209-210	00	0	00
D2	D2	210	00	0	00
D3	D3	211	00	0	00
D4	D4	212	00	0	00
D5	D5	213	15	21	27
D6	D6	214	09	9	08
D7	D7	215	0D	13	0D
D8	D8	216	00	0	00
D9-F0	D9	217-240	00	0	00
DA	DA	218	00	0	00
DB	DB	219	00	0	00
DC	DC	220	00	0	00
DD	DD	221	00	0	00
DE	DE	222	00	0	00
DF	DF	223	00	0	00
E0	E0	224	00	0	00
E1	E1	225	00	0	00
E2	E2	226	00	0	00
E3	E3	227	00	0	00
E4	E4	228	00	0	00
E5	E5	229	00	0	00
E6	E6	230	00	0	00
E7	E7	231	00	0	00
E8	E8	232	00	0	00
E9	E9	233	00	0	00
EA	EA	234	00	0	00
EB	EB	235	00	0	00
EC	EC	236	00	0	00
ED	ED	237	00	0	00
EE	EE	238	00	0	00
EF	EF	239	00	0	00
F0	F0	240	00	0	00
F1	F1	241	00	0	00
F2	F2	242	00	0	00
F3-F4	F3	243-244	00	0	00
F4	F4	244	00	0	00
F5-F6	F5	245-246	00	0	00
F6	F6	246	00	0	00
F7-F8	F7	247-248	00	0	00
F8	F8	248	00	0	00
F9-FA	F9	249-250	00	0	00
FA	FA	250	00	0	00
FB	FB	251	00	0	00
FC	FC	252	00	0	00
FD	FD	253	00	0	00
FE	FE	254	00	0	00
FF	FF	255	00	0	00

00FF-010A	256-266	Floating to ASCII work area
0100-013E	256-318	Tape error log
0100-01FF	256-511	Processor stack area
0200-0258	512-600	BASIC input buffer
0259-0262	601-610	Logical file table
0263-026C	611-620	Device number table
026D-0276	621-630	Sec address table
0277-0280	631-640	Keybd buffer
0281-0282	641-642	Start of BASIC Memory
0283-0284	643-644	Top of BASIC Memory
0285	645	Serial bus timeout flag
0286	646	Current colour code
0287	647	Colour under cursor
0288	648	Screen memory page
0289	649	Max size of keybd buffer
028A	650	Repeat all keys
028B	651	Repeat speed counter
028C	652	Repeat delay counter
028D	653	Keyboard Shift/Control flag
028E	654	Last shift pattern
028F-0290	655-656	Keyboard table setup pntr
0291	657	Keyboard shift mode
0292	658	0=scroll enable
0293	659	RS-232 control reg
0294	660	RS-232 command reg

0295-0296	661-662	* Commodore 64 only
0297	663	Bit timing
0298	664	RS-232 status
0299-029A	665-666	RS-232 speed/code
029B	667	RS232 receive pointer
029C	668	RS232 input pointer
029D	669	RS232 transmit pointer
029E	670	RS232 output pointer
029F-02A0	671-672	IRQ save during tape I/O
02A1	673	CIA 2 (NMI) Interrupt control
02A2	674	CIA 1 Timer A control log
02A3	675	CIA 1 Interrupt log
02A4	676	CIA 1 Timer A enabled flag
02A5	677	Screen row marker
02C0-02FE	704-766	(Sprite 11)
0300-0301	768-769	Error message link
0302-0303	770-771	BASIC warm start link
0304-0305	772-773	Crunch BASIC tokens link
0306-0307	774-775	Print tokens link
0308-0309	776-777	Start new BASIC code link
030A-030B	778-779	Get arithmetic element link
030C	780	SYS A-reg save
030D	781	SYS X-reg save
030E	782	SYS Y-reg save

030F	783	SYS status reg save
0310-0312	784-785	USR function jump
0314-0315	788-789	Hardware interrupt vector
0316-0317	790-791	Break interrupt vector
0318-0319	792-793	NMI interrupt vector
031A-031B	794-795	OPEN vector
031C-031D	796-797	CLOSE vector
031E-031F	798-799	Set-input vector
0320-0321	800-801	Set-output vector
0322-0323	802-803	Restore I/O vector
0324-0325	804-805	INPUT vector
0326-0327	806-807	Output vector
0328-0329	808-809	Test-STOP vector
032A-032B	810-811	GET vector
032C-032D	812-813	Abort I/O vector
032E-032F	814-815	Warm start vector
032E-032F	814-815	USR vector
0330-0331	816-817	LOAD link
0332-0333	818-819	SAVE link
033C-03FB	828-1019	Cassette buffer
0340-037E	832-894	(Sprite 13)
0380-03BE	896-958	(Sprite 14)
03C0-03FE	960-1022	(Sprite 15)

VIC 20	
0400-0FFF	1024-4095
1000-1FFF	4096-8191
1E00-1FFF	7680-8185
1000-11FF	4096-4601
1200-	4608-
2000-7FFF	8192-32767
8000-8FFF	32768-36863
9000-900F	36864-36879
9110-912F	37136-37151
9120-912F	37152-37167
9400-95FF	37888-38399
9600-97FF	38400-38911
A000-BFFF	40960-49151
C000-FFFF	49152-65535
FF8A-FFFF	65418-65525

Commodore 64	
0400-07F7	1024-2039
07F8-07FF	2040-2047
0800-9FFF	2048-40959
8000-9FFF	32768-40959
A000-BFFF	40960-49151
A000-BFFF	49060-49151
C000-CFFF	49152-53247
D000-D02E	53248-53294
D400-D41C	54272-54300
D800-DBFF	55296-56319
DC00-DC0F	56320-56335
DD00-DD0F	56576-56591
D000-DFFF	53248-53294
E000-FFFF	57344-65535
E000-FFFF	57344-65535